

Application No.: 09/722,270

Docket No.: R2184.0089/P089

REMARKS

Claims 1, 9-11, 15, 25-27, 33, 43-46, 56 and 58-63 have been amended. The changes made to claims 1, 15, 33, 56 and 58-60 are supported by the original disclosure, including Fig. 2 and the corresponding specification. In a preferred embodiment of the invention, image data is compared with a threshold (Step S4 or S6) and, based on the result, a final output value is determined in Step S5, S7 or S8. The claimed invention should not be limited, however, to the preferred embodiments, and Applicants reserve the right to pursue the original claims and other claims in this and other applications. Claims 9-11, 25-27, 43-46 and 61-63 have been rewritten in independent form, with no substantive changes.

Claims 1-95 remain in the application. The application now contains twenty-one independent claims. The applicable fee for the additional independent claims is being filed concurrently herewith, along with a Petition for Extension of Time. Please charge any deficiency in the fees to Deposit Account No. 04-1073 (R2184.0089).

Dependent claims 12-14, 17-19, 28-30, 35-37, 47-49 and 65-74 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Reconsideration is respectfully requested. The words "medium" and "dark" are ordinary English-language words. They have a well-understood meaning in the context of the claimed invention. Contrary to the Office Action, the claims are not limited to specific "degrees of darkness." One of ordinary skill in the art "would understand what is being claimed, in light of the specification," and the Office Action does not contend otherwise. Consequently, the rejection of claims 12-14, 17-19, 28-30, 35-37, 47-49 and 65-74 should be withdrawn. See M.P.E.P. § 2173.05(b).

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Claims 15, 16, 18, 20-24, 29, 33, 34, 36, 38-42, 48, 50-54, 56-60, 75 and 91-94 are rejected under 35 U.S.C. § 102 as being anticipated by Marcu. Claims 1-8, 12-14, 31, 32, 76-79, 81-84 and 86-89 are rejected under 35 U.S.C. § 103 as being unpatentable over Marcu. Reconsideration is respectfully requested. All of the rejected independent claims have been amended, as noted above. The claims as amended should be patentably distinguishable over Marcu.

Marcu refers to a system in which, when a black (or white) dot occurs in a region around a target pixel in a highlight or shadow region, the target pixel is output as a white (or black) pixel so that occurrence of a "worm" may be avoided. As to the region around the target pixel for which it is determined whether or not the black (or white) pixel occurs, it is changed according to an image grayscale value, as shown in Table 2. As the image grayscale level becomes closer to a white level, the above-mentioned region is enlarged so that black dots may not occur close to each other. As the image grayscale level moves toward a black level, the region is reduced so that black dots are allowed to occur close to each other. Control of occurrence of a white dot if the image grayscale level comes close to the black level is performed in the same manner. Thus, according to Marcu, a once occurring dot is output at a different location and, as a result, the number of black dots is not actually reduced. In other words, in the Marcu system, the position at which a black dot occurs is controlled.

In contrast to Marcu, according to the present invention, the number of specific dots is counted in a region around a target pixel and, based on the count result, occurrence of the specific dot is controlled. As illustrated in Fig. 4, processing is performed such that actually an occurrence rate of specific dots (in the Fig. 4 example, the minimum dots) is reduced, for example.

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Further, according to the present invention, re-quantization processing, described above, is performed. As illustrated in Fig. 2, Step S4 or S6, image data is compared with a threshold and, based on the result of the comparison, a final output value is determined (Step S5, S7 or S8). As a result, it is possible to achieve smooth control of a dot occurrence rate for each output value.

In the Marcu system, when output of a black (white) dot is controlled, output of the dot is avoided. As a result, when the black dot is controlled, a white dot is output necessarily. Thus, according to Marcu, re-quantization processing as in the present invention is not performed.

The allowance of claims 9-11, 25-27, 43-46, 55, 61-64, 80, 85, 90 and 95 is gratefully acknowledged.

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